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TYPES AND PRINCIPLES OF CURRICULAR DEVELOPMENT[1]

This paper deals with efforts to improve the school subjects of study as they are being changed to meet modern conceptions of education. Two types of curricular improvement will first be outlined; then a discussion will be presented of certain principles which need to be kept in mind in developing or using new types of curricular content. The types presented are illustrative rather than complete in their support of the principles later to be discussed.

At a meeting held in connection with the Department of Superintendence one year ago, a preliminary report was made of an investigation to determine what use the public is now making of subject matter related to one of the school subjects of study. This investigation has been completed and a monograph based upon it has just been printed. So much has been said regarding the need that education shall fit people better to engage in affairs in which common life is concerned, that it seemed wise to initiate a series of investigations to determine relations that do now exist between school subjects and the situations that arise in affairs out of school. The subject of this investigation was chosen in order to determine to what extent and in what ways biology is used; and at the same time to see to what extent such methods of investigation may contribute to curricular reorganization in this and other subjects. The investigation deals with the extent and nature of use of biological material in the public press. That is, what kinds of biological information is the citizen now reading? In what ways is this information related to school work in biology? Do the public press articles make any valid suggestions as to needed changes in content or method of the school subject? Do such articles provide significant biological situations or needs that are available for use in school instruction, either as introductory, foundational or concerning applications related to the topics of school instruction? The so-called "case system" or use of specific occurrence with its problem and the methods and principles by which it is met has been found to be a valuable means of beginning studies of units of work in law and medicine and to some extent has been used in general education.

The briefest summary must serve our immediate purpose. Seventeen full months' issues of representative daily newspapers were secured, making a total of 492 different papers and approximately 14,000 pages. These papers ordinarily reach several millions of readers. All of the pages were examined, and all biological articles other than those which were paid advertisements, or regularly recurring commercial stock reports, were collected and classified. Mere biological allusions were omitted, thus limiting the collection to articles clearly biological, and of news or editorial value. A total of 3,061 such articles were secured, these having an average column length per article of over 8 inches.

Careful study of all articles resulted in

[1] Delivered before the Department of Superintendence, National Education Association, Cleveland, Ohio, February 28, 1923.

a classification, consisting of 8 main divisions, each main division having secondary and tertiary subdivisions. Thus "Health biology," which includes 897 of the 3,061 articles, is represented by articles classified under eight sub-headings: Biology of infectious diseases, hygiene and sanitation, health education, non-infectious diseases, dietetics, drugs, first aid and physiology. The sub-division "Infectious diseases" is itself represented by 19 further sub-divisions. The other main divisions beside health, in the decreasing order of their numerical importance, are animals, plants, food, organizations of products, general nature, evolution and fictitious biology.

A study of the tabulated number and length of articles shows the outstanding importance of the first four groups—health, animals, plants and food. The average length of articles upon general nature and evolution is slightly greater than that of the first four groups, but the total number of such articles is relatively quite small. Fictitious, make-believe or spurious biology is suprisingly small, since but 14 of the 3,061 articles belong to this group. Furthermore, the average length of fictitious articles is less than one half the average length of all articles. This is a remarkably creditable change from a few decades ago, when so many fictitious articles appeared in the newspapers. If this study is representative, one may now read two hundred newspaper articles based upon biological information and in so doing would probably encounter but one fictitious article.

There is not time and it is not appropriate in this connection to present statements of details concerning the contents of articles under the different biological headings. A few statements in summary of the results of the investigation will show the significance of this type of study.

Of the 492 issues of newspapers studied no issue was without one or more biological articles.

The articles found are of the same general types in all parts of the country, with local variations readily accounted for by special local situations.

The proportion of biological material to the number of pages issued monthly by different papers does not vary greatly, thus indicating a fairly well-recognized need and use of newspaper copy from this field.

Health biology, which appears in largest quantity, thus relates interestingly to recent conclusions reached by national educational committees to the effect that health is the first aim of education. The largest proportion and greatest length of health articles appear in communities in which, from other sources, it is known that greatest effort is being made to conserve and improve human health. Whether improved health and greater interest cause the larger number of health articles, or whether the improvement in health is brought about by greater publicity can not now be decided.

Biology pertaining to health, animal life, plant life and food is easily the dominant biological interest of the public, so far as this investigation presents dependable data.

A surprisingly small amount of fictitious biology appears in the papers studied, thus showing a most wholesome respect for biological truth. This does not mean that erroneous statements do not appear. For example, it was stated that the germ causing yellow fever has not been discovered. It has been discovered, but the writer of the erroneous statement was not so informed. He did not wilfully deal in fiction.

Newspapers are more nearly up-to-date in biological accuracy than are many text-books, since their articles are "news," preferably direct from the producer to the consumer. At the best, text-books can not entirely keep up-to-date, and many of

them do not make earnest endeavor to do so. A biological text-book which is one or two decades old carries more fiction than do most of our leading newspapers.

Since the advocacy of social and industrial controls, depending upon modern biology and the types of biological information which appear in the representative press are so widespread and constant, should not the school courses in biology include topics found as legitimate ones for school use, if, as we say, education is designed to help people in common life?

Finally, if these topics are those of common occurrence, should not some or many of them, or others in similar articles, be used as significant situations in presentation of topics of instruction in biology?

This investigation provides sufficient guidance for a substantial advance in defining course content. Other investigations are needed to determine: whether the public press presents the biological material which the people should have; whether courses of study in schools are in any way responsible for whatever appears in the articles dealing with biology; whether the press or the public desires to use other biological material than that which is used; whether professional biologists believe the public is securing the kinds of biological information biologists think or can prove would be good for the public.

For a second type of effort in curricular improvement, let us turn to one of our older, more nearly standardized subjects —mathematics. Teachers in colleges, high schools and elementary schools are in general agreement that reorganization is needed. There have recently been many investigations and reports of committees that have recommended extensive modifications of present practice in mathematical instruction. The final report of the National Committee on Mathematical Requirements enumerates the outstanding reasons for a reorganization of courses in mathematics.

Among many important conditions stated by this report are the following:

That much of the content of the usually required courses makes little contribution to the pupil or adult needs of modern life.

That the organization of these materials and instruction by use of them are not based upon modern psychology of learning.

The report emphasizes the need for giving especial attention to the elementary grades, and to grades seven, eight and nine. Several groups of workers are attempting to provide better curricular materials and accompanying methods. I shall outline the procedure of one of these groups.

Fifteen hypotheses or guiding principles were first formulated. These are based upon investigations, results of surveys and the best guidance available in the philosophy of education. Six of these principles are:

Mathematics, in the elementary and junior high school grades, should be primarily a tool for the quantitative thinking that children and adults need to do.

Each year should give the most intrinsically valuable mathematical information and training that the pupil is capable of receiving at that time, with little consideration of the needs of subsequent courses.

The preceding aim necessitates the inclusion in junior high school grades of certain elements of arithmetic, intuitive geometry, algebra, trigonometry and statistics, although these are not to be rigidly classified under the traditional divisions as named.

Manipulation of mathematical symbols as an end should be omitted; and attention should be directed toward a better appreciation of the part that mathematics has occupied and is now occupying in the progress of civilization.

There should be a marked increase in the accuracy of computation with integers, fractions and per cents.

Following the formulation of the above

principles, an inventory test was given to a large number of children who were just entering the seventh grades in thirty cities. The purpose of this inventory was to furnish more complete information than previously existed regarding the mathematical abilities that such children possess at the end of the sixth grade, or that the seventh grade teacher may reasonably expect as his foundation for work. The test consists of 125 very simple elements. The content of courses of study and the opinions of text-book writers were used as the two bases in the construction of the test.

The nature of a few elements in the tests is cited, together with the degree of mastery of each which pupils were found to possess. "Write .25 as a common fraction." The per cent. of correct responses was 69.4. "Does 4896 divided by 10 equal 4.896, 48.96, 489.6 or 4896?" Again almost one third of the pupils fail. "Write $\frac{1}{5}$ as a decimal fraction." Almost one half are in error. "What is the average of 4, 6, 8 and 10?" Two thirds fail to average these numbers correctly. "Theodore Roosevelt was born October 27, 1859 and died January 6, 1918. His age was ..... years, ... months and ..... days." But 17.3 per cent. of the pupils made the correct age calculations.

It was found that there is very little in this inventory which beginning seventh grade pupils can do with anything like 100 per cent. efficiency. Those points which are answered with high success are such as: one dozen equals 12 things, one minute equals 60 seconds, drawing a circle when the pupils see the word circle. These elements are given extensive practice in the home, in the grocery store—that is, these things are learned chiefly in the out-of-school situations. If something is discovered that children know with a reasonable per cent. of efficiency, the mathematical instruction can by no means claim the full credit for having secured it.

This inventory of sixth grade arithmetic may be summarized as follows: There are but 8 of the 125 elementary mathematical points that are correctly answered by as many or more than 90 per cent. of the pupils. There are 34 of the 125 points answered by as many or more than 70 per cent. of the pupils. There are but 59 of the 125 points answered by as many as half of the pupils. That is, considerably more than half the pupils failed on 66 of the 125 points in this inventory.

There are those who say that the outstanding indictment of our American schools is that we foster half-learning. It appears that they exaggerate and are too generous in this hard accusation, for here is evidence that we really achieve much less than 50 per cent. mastery.

The third step in this study of mathematics consists of an effort to discover valid materials that pupils can and should learn. This includes inventories of the mathematical elements found in other school subjects and in widely read magazines. For example, there has been a study of the specific geometrical concepts which facilitate general reading and the frequency of occurrence of unusual fractions.

Guided by the hypotheses stated in the first step, by the inventories of mathematical attainments, and by data upon the uses made of mathematics, tentative mathematical topics and teaching materials were prepared for experimental use in 30 cooperating schools. After cooperative trial, criticism and tests, the materials have been revised for further trial. The seventh grade material is now in use for the third year, having undergone two revisions.

What is involved in trial of curricular materials in cooperating schools? It is attempted to divide the seventh grade pupils into two groups as nearly equivalent in mathematical ability as measurement and judgment will permit; to one group

the experimental materials are taught as prepared, to the other group, the conventional mathematical course is taught; achievement tests are given to both groups at the beginning and the end of the year; the teacher keeps a systematic record of the successes, failures and interests of the pupils, whether explanations regarding the experimental materials were sufficient, practice materials adequate, terminology clear, the extent to which subject matter relates to the children's experiences, and the suitability of projects that were used. The cooperating teachers, when they have finished teaching a given unit of material, make systematic reports on prepared blanks.

These records help to determine the proper distribution of drill and practice work and the need for fixing learning through cumulative reviews which consist of new applications of previously learned principles.

What are the outstanding characteristics of these courses? Four will be mentioned.

Geometry materials, which deal with practical measurements and graphic presentation of facts, are organized after the ideals of the laboratory method. There is a definite effort to utilize a wider range of sensory experiences. By means of construction, measurement, inference, generalization and verification, pupils are initiated in experimental and scientific methods of learning.

Social and economic materials are organized in the form of projects—often group undertakings—in which meaning rather than skill is the desideratum.

More effective learning is secured through the use of social, human situations appreciated by the pupils. Materials in the course are written not only for the pupil, but to the pupil.

The basic skills in computation—common fractions, decimals, per cents, and common sense estimating—are organized in a series of timed practice exercises. This makes it possible for each pupil to progress at his own rate, and to measure his daily growth. The evidence is definite that such practice exercises will secure accuracy, the absence of which makes much mathematical work almost absurd.

The two types of curricular study which have been summarized above are all that can be presented within the time limits of this paper. In order to be fully illustrative of the educational principles which I wish now to state we should need to give similar summaries of curricular studies dealing with reading in the first two grades, with music in the intermediate grades, with productive literature in the junior high school, with pupil use of the school organization as part of their curricular material, and with other studies. It can not be said that all curricular experiments accept the principles stated as their guides. There are those who proceed to collect factual elements of courses of study as if when facts are collected courses are thereby determined. That is but one step in curricular study. Curricular organization can not be soundly advanced unless its guiding principles clearly include a sound point of view regarding method of work and study as well as factual materials of the subjects. Nor can we safely proceed on the vagary that all that is now in any curriculum is wrong and all must be done anew. Such would be a queer judgment upon the curricular evolution of past decades. With these facts in mind, and with the desire to include educational purposes as well as curricular guides, I wish now to state certain principles which it seems should be clearly defined for use in any reorganization of the school subjects of study.

I. Pupil attitude toward school subjects. Children learn best, retain longest and find learning most stimulating and most usefully available when the subject

matter and methods of school work are engaging and genuine, not repulsive and artificial. Those who hold this view believe that more and not less effort is made by pupils when they are occupied by engaging and real work; hence, if more effort is made more educational growth may be secured. It is not believed, however, that all pupils are all the time held to high effort merely by the holding power of vital subject matter, but it is believed that subject matter should be so selected and used that more should be gained than has been from its inherent significance to pupils. It is not claimed that a more vital subject matter content will of itself insure desired educational results, but this is one of the indispensable requirements for improvement. Until we know more than any one now knows about children and about proper subject content, there will continue to be plenty of need for some kinds of guiding and exacting, but intelligently supported compulsions beside those the pupil recognizes as inherent in the value of the subjects he studies. There is, however, a very much larger place than has been utilized for new and meaningful types of content in subjects of study. This statement is by no means new, but is old only as a statement; it has not yet effected very extensive changes in actual subject content. It is much harder to accomplish the needed changes than to see clearly that changes are needed. The latter, for each school subject, requires prolonged and careful classroom trials with school children. Indeed it is possible that comparative trials may show that some whole subjects may profitably be omitted, or others added.

II. Pupils must succeed in school subjects if pupils are to be educated. Pupils develop fastest when engaged most of the time upon things in which they succeed, not fail. Educational efforts must usually result in success if further effort is to be carried on with fervor and wholeheartedness. When a college entrance examiner recently stated that "a college entrance examination in physics should not permit over 60 per cent. of those taking it to pass," he was supporting and promoting one of the most serious situations in modern education. The one third who do not pass, together with the large number of others who are advised not to try the examination, are living and discouraged exponents of a situation so set up as to be almost hopeless educationally for most of those thus discouraged. Incomplete and imperfect learning and consequent failure are needlessly depressing. They are needlessly costly in money, school space and human life, since those who fail have not moved on to the next level of achievement. Subjects should be so selected and used, and pupils and subjects both graded so that more pupils succeed, in order that later success may also be had. There need be no fear that there will not be enough failures remaining to provide ample occupation for those teachers who through sheer arbitrary discipline wish to engage in the occupation of goading failure into mediocre success.

III. The rate and quality of learning are improved by an increase in number of senses used. There is an oft-stated principle, still too little used in curricular planning, to the effect that pupils learn best when their minds are approached by senses and materials other than those that relate primarily to words. Our education has become one of much words. It is not likely that any modern educator wishes to reduce the use of reading or language, or other use of printed forms of expression, but there is too large an omission of fundamental experiences which involve touch, taste, sight—the experiences of the daily life for which we say we are preparing our pupils. We interpret by means of sense experiences. We gain desire and ability to read, to reflect, to memorize; we

create visions of things good to do, or things to be avoided, by use of experiences which involve senses not now fully used in the subjects of study. It is so much easier to organize and use subjects of study as definitely set printed pages, as assignments to be reproduced in recitation, than it is to use assignments as follow-up discussions of situations derived from experience. We have fallen into a conventional education of words. Again my point contains nothing new; but again must it be clear that teachers and those who make courses of study have assented again and again to platform argument and then proceeded to act as we did before. Subjects of study have not changed as have our theories of what subjects are for. Our advance in principles and ideals to which we assent has outrun our progress in practice in the use of school subjects.

IV. The subjects should be organized and used so that pupils may teach one another. Education has never made adequate use of the fact that children learn much from one another and our subject organization does not favor such mutual teaching. Instead of the still too common practice of discouraging communication and mutual assistance, the school atmosphere and the organization of the subjects of study should encourage such mutual pupil teaching as may pertain to the particular subject content upon which they are engaged. Subjects of study should be selected and organized so as to facilitate teaching of pupils by one another. The topics and content of studies should be such that pupils can come into mutual and cooperative mastery of them.

V. *The school's organization is a legitimate and necessary part of the subjects of instruction.* If school is training for social effectiveness, the school institution must itself be socially effective. To be so the educational processes must be cooperative, and the activities and procedures which enter into the school's organization must be used as true subject matter material. When this is not done, the different members of the school community live a false school life under the guise of preparing for a later real life out-of-school. Democratic education begins within the school by use of the school itself, else the school must fail in part of its social and civic contribution to its pupils. This means that school curricula and methods and building organizations must be participated in by pupils, and that the school's own organization is a part of the school's curricular possession, not a personal possession of the administrative officers. If this is true, it means that administration must secure a closer relation with the school subjects than is now common. Needs for school funds, school buildings, general organization have caused too wide a separation between administration and the real work of the schools.

An explanation of the disparity between educational principles and ideals on one side, and school practices on the other seems reasonably clear. Educational theorists and philosophers have engaged in statements and argumentation which were abstractly appealing to their readers and audiences, and when asked concerning specific things to do in prosaic school rooms have replied that those are details to be worked out by an enlightened teaching profession. This diverting by-play, when serious, betrays an unfounded confidence in the productive capacity, available time and energy, of most members of the teaching profession. It overlooks or evades the fact that most difficult of all is the task of improving the courses of study with which the profession deals. It overlooks the fact that school practices are

not likely to be changed suddenly from their present position to the very advanced position outlined by new principles and ideals, but that school practices evolve from what is. Biologically and sociologically things which are have come rather directly from things which have been, and from much of our educational theory nothing has come. It has recently been said that "the theorists failed to create a machinery of books, methods and teachers to carry out their theories. Ideas will never be carried out unless they are embodied in machinery. So when the theorists failed to develop new machinery for their new conceptions, the old machinery already in use in the schools—the old books, old methods and old points of view—continued to function in the old way."

The relative satisfaction with the definiteness of the present subjects of study as compared with the confusion produced when changes in content and method are introduced often seems to be an argument in favor of leaving things as they are. Similar confusion as to the aims of education is also cited as reason for waiting until aims are more clearly defined. But aims are sufficiently clear to show many people the necessity of change, and pragmatically our aims can not be finally stated until after trial and measurement it is found what can really be accomplished. Fortunately teachers and investigators in various school systems all over the country have accepted the necessary complications resulting from efforts to change the content of subjects of study and have found the confusion not destructively disconcerting. Rather have they found that constructive improvement of subjects awakens teachers to new confidence in the progress of education.

Otis W. Caldwell

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PHILOSOPHERS IN COUNCIL

Critics of educational method sometimes assume that examinations are pure tests of memory, and critics of the study of philosophy often conceive metaphysics as out of relation both with practical life and with the other subjects of a college curriculum. The following summary of an actual examination suggests that both these judgments are premature. The italicised portions reproduce the examination-paper (chiefly the work of Miss Flora I. MacKinnon) as it was placed before the students. Only the question numbers and the mechanical directions are omitted. The unitalicized parts are taken *verbatim* from the examination books of several students. The editor has with difficulty selected this material from a much larger number of "returns" almost equally well suited to her purpose. She has often omitted and sometimes transposed but has added only the transition words and phrases which are enclosed in square brackets. As will be evident, the "Last Words" embody the individual conclusions of different students.

Mary Whiton Calkins

Wellesley College

A PHILOSOPHICAL SYMPOSIUM

Time: *An evening in early June, 1922.*
Place: *Lake Waban.*

Six girls in two canoes, having finished their supper, are drifting quietly down the lake with the canoes held together to make possible a general conversation. After a brief discussion of the final examination in philosophy which they have all taken in the morning, they find that they have among themselves representatives of most of the types of philosophical theory studied during the course. Freed from the necessities of preparing for examination they fall to discussing on their merits these various conceptions of the nature of reality.

Persons:
Delia, *who holds a dualistic view.*
Bernice, *a Berkleian idealist.*
Matilda, known as Mattie, *the materialist.*

POLLY, *a pluralistic personalist (one who holds a personalistic conception of nature).*
ABBIE, *the upholder of absolute personalism.*

DIRECTIONS:

(1) *Complete the speeches suggested below in accordance with the assigned characters of the speakers.*

(2) *Add a last word from the speaker who most nearly represents your own opinion.*

DELIA. *To get down to concrete facts, Bernice, just what do you think this canoe really is, and just what do you think you really are?*

BERNICE. *As for your last question, I think as you do that I am* a unique, thinking, unified self who has ideas and who knows herself through her ideas. Not that I am my ideas for I am indeed a distinct individuality but I have ideas and I know myself through them.

The canoe in my opinion surely exists but only in our minds and the mind of God.

DELIA. *I don't agree with you at all. I am sure the canoe is* material reality existing independent of my mind. I believe with you, of course, that its color is not a character that belongs unchangeably to it, in fact, that the weight and texture and all the secondary qualities are not distinctly its characters. But I do maintain that its extension and motion exist entirely independent of me or any one else and that they are stable and unchanging characteristics of the canoe. What is more, *nine people out of ten will agree with me. Why do you insist on being different?*

BERNICE. *It is only carrying on in the same line a part of your own description of the canoe. You admit that color, for instance, does not exist unperceived. I insist that the same thing is true of extension, for* surely, when I am up in a tower looking down, men look no more than pigmies five or six inches high. But when I am down on the ground among them I realize that they are all five or six feet high and that their size varies with my point of view. Yet if they were composed of matter existing entirely independent of my mind it would not be in my power to see them other than they really are, six feet or six inches high. But, since extension and motion like the other qualities exist only in the mind, I can understand the world I live in.

You remember the man who talked in Billings last year on Einstein? Well, it's something like that. It all comes back to idea and the mind.

MATTIE. *Nonsense! What the canoe is, is* matter. We know it is wooden, painted green and about seven feet long. It is made up of atoms reducible to electrons. The canoe is matter. How can you believe anything else as a self-respecting Physics major? I'm sure my Chem. makes me believe in matter. *And what you are, and what I am, and what every one else is, is* matter. We are conscious because of our brains which function—oh, you know the processes we learned in Freshman Zoo and by laboratory experiments. (I've dissected a cat's brain myself!) The brain is one of the bodily organs. Its particular function is to give consciousness which is only one of the properties of matter.

DELIA. *But I never could see why you reject Descartes's hypothesis of two kinds of reality,* thinking substance and matter, a substance having the quality of extension, and independent of mind as far as its existence is concerned, though it may be influenced by mind.

MATTIE. *That view is perfectly impossible. For one thing it can not possibly be squared with the theory of evolution, for* we can trace the growth of the mind or brain, which you call spiritual, from the earliest form of life, even from the most primitive forms of plant life, all the way up to man. And all through this long evolutionary scale we are dealing with only one substance, namely, material reality, or matter, which is governed by the universal law of conservation of matter and of energy. Since all the way through we are dealing with only one substance, you have no right to introduce a different kind of substance, soul or spirit, at any place in the scale. Moreover, you simply couldn't do this, without increasing the sum total of energy in the world, and this is contrary to the universal law of the conservation of energy.

BERNICE. *I am with you, Mattie, in saying that there can be only one kind of reality in the universe. But I am sure that Abbie and Polly will agree with me that this one kind is not* matter but spirit [with] its ideas. *Your argument from evolution does not in the least prove what you say it does (although of course we accept that theory in some form or other) for* your proof [is] that starting out with matter you end up with matter. That is not the point—how do you know you started out with matter? I don't believe you did. The world [is] a complex of ideas existing in God's mind and became revealed to finite spirits. Of course, I expect you to say that there were no finite souls for this evolving universe to be

revealed to. But you can not be sure. There may have been sub-human souls or minds present.

MATTIE. *But how can you seriously say, as you apparently do, that this canoe is nothing but a lot of sensations that you happen to be having just now? How does this mere idea of a canoe keep you out of the water?*

BERNICE. *That's a better joke than argument. Both the canoe and the water* do exist, but they exist as ideas. Be consistent, Mattie!

DELIA. *That is all very well for your perceptions of the canoe and the water, but there must be a cause for those perceptions, and that cause is matter.*

ABBIE. *Why matter?*

DELIA. *You sound as if you had never heard of Descartes's argument that the cause of perception must be matter.*

BERNICE. *Don't quote that obsolete argument to me. Berkeley answered it long since. Matter as Descartes described it simply can not be the cause of anything at all because* matter by definition is inactive, and to be the cause of something requires activity, equally by definition. And matter certainly can not be the cause of mind because they are essentially different according to Delia's definition, and the cause must have all the qualities of the effect.

MATTIE. *Well, if ever there was an obsolete and archaic argument it is certainly yours. Matter in any even half-way modern type of thought about it can perfectly well be a cause. Consider the atom, infinite millions of it, each one vibrating at an almost incalculable rate of speed, combining in infinite variety to form all the substances of the known world, and stop saying that matter can not be the cause of your feeble minds, or of anything else.*

BERNICE. *I never for one moment denied that my perceptions have a cause. I simply insisted, and continue to insist, that the cause can not be matter. Your bringing in of this theory of oscillating atoms to bolster up a bad case doesn't help it at all for* the vibration of atoms is really, after all, only a matter of motion and extension, and Berkeley proved that motion and extension are sensible qualities existing only as they are perceived, so there you are back to the mental again. You can't get away from it. [Moreover] if you will carefully consider what you conceive of when you think of activity, you will realize that the only form of real activity in the world is volition.

POLLY. *What you say about the nature of physical objects, Bernice, may do well enough for the canoe, but you will never convince me or any other lover of nature that this willow, trailing its leaves in the water, exists only as an idea without any reality of its own. I, for one, believe with Leibniz and some contemporary philosophers that a tree is* a sub-human self, or part of a sub-human self, or a collection of sub-human selves with perceptions as indistinct as our own in our sleepiest moments, or when we faint or take an anesthetic. (You know that feeling of "I'm just barely here" that you get just as you drop off). These selves are in constant flux and transformation, a sort of metamorphosis. Of course Mattie couldn't perform an experiment to prove this, but it is conceivable that [our tree-percepts] are signs of such sub-human selves just as our bodies are ideas that are signs of our selves.

MATTIE. *I don't see that you have any right to that theory, Polly. If you and Bernice really mean what you say I think you should come to the conclusion that nothing at all exists except your own ideas.*

BERNICE. *Quite the contrary. I know there is a real physical world because I perceive it. And because I know that, I come to the conclusion that God exists, for* many of my perceptions come to me against my will, and since they must have a cause that cause is outside myself. Then if they aren't my ideas, they must be ideas in some one else's mind. But the world of physical objects is so intricate, so stupendous and so marvelous that I have to conclude that it exists in the mind of an all-wise, all-powerful, all-knowing and entirely good being who is God. *Also I consider that I have some reason to believe that other finite selves like myself exist.*

ABBIE. *If you followed out your argument to its logical conclusion you would agree with me that God is not simply the creator of the universe but is* an Absolute Self including within himself all other selves and spirits in the universe, and [that he is] something more—a personality beyond the sum of the selves that are parts of him. *Because, don't you see* that it is ultimately impossible for God to cause in us ideas as you say he does, unless there were some vital connection between him and us. According to what you say there would have [to] be an association between his mind and ours so intimate that consciousness is shared. This gives us the conception of ourselves as a part of God—the whole universe being ultimately one soul and one spirit in which we are all contained. This all including Absolute Spirit shares all our experiences because he is more—not less than we are.

POLLY. *It is a pretty theory, Abbie, the chief trouble with it being* that I don't see how you can reconcile individuality with the [doctrine] that we are all part of one great, all-including self. If we are all parts of the same whole how can we hold such radically different opinions, and be at such variance among ourselves? Besides, how can many selves make one self? And furthermore if the Absolute Self shares our experiences would He not be limited too?

ABBIE. *You never would see reason along that line. But if you don't accept my conclusion, how can you ever reconcile the conception of God that you and Bernice seem to agree upon with the awful evils of sin and suffering in the world?*

BERNICE. *Evil as we see it is not incompatible with the reality of God, for* God does not really cause evil, we are the cause of it—we have been given by God the limited freedom of will—and are thus far responsible for the evils we commit by that freedom. He does not cause the evil. Furthermore evil is a part of the whole which is good. A thing may be evil when it is considered alone—but considered in connection and relation with the whole which is good—it is good.

ABBIE. *That won't do, Bernice. You are arguing in a vicious circle, for* you have just argued the existence of God from the perfection of the physical world, and now you turn completely around and argue the perfection of the physical world from the character of God. You can't use each to prove the other.

MATTIE. *But both of you start, just as Delia does, with a pure assumption, namely, that there is spiritual, incorporeal reality in the universe. If you assume that to begin with, of course you can prove anything.*

DELIA. *I don't assume that at all. I hold* that I immediately know the existence of myself and of my modes of consciousness, for in the very act of trying to doubt my own existence I discover that there must be some one to do the doubting.

LAST WORDS

MATTIE. How do you know that the self you are conscious of isn't matter—a form of it? It is the one thing you know first of all—yes? But why assume it to be spiritual? Your self is just that part of the material world you know first of all, and most surely, and by means of which you learn to know the rest.

DELIA. I believe in spirit because I am directly conscious of myself as a spirit and because all of my little religious experience demands belief in spirit. Belief in the material reality of things about me seems much simpler than to believe in a [wholly] mental world. Belief in matter is [in fact] just a simple and sensible belief after studying science and evolution; [whereas] saying that evolution is a series of ideas somebody might have had seems to me to hedge rather awkwardly. As for the interrelatedness of matter and spirit it seems very conceivable to me. My soul does affect my body. How else would I be different from a machine—yet I assuredly am not a machine because I am conscious of myself. In the world about us we see unlike things interact and just so I hold that mind and body affect each other.

[To sum up:] I believe in matter because of the rational simplicity and reasonableness of the idea. I believe in spirit because I can not doubt that I am spirit and I feel the existence of other spirits and God, not only necessary but reasonable. I believe in the relation between spirit and matter because it explains so many phenomena.

BERNICE. But I do not see, Delia, how you can assume the existence of material substance when the only proof you have of its existence is your perceptual, sensory [experience]. It seems to me much more reasonable to conceive the universe as made up of spirits and ideas, the spirits the subjects and the ideas the objects of the perceptions. God is conceived as the infinite spirit, in whose mind exist all the ideas which give rise to my perceptions.

POLLY. We are all beating around the bush fearfully, girls. I really don't believe any one has yet proved anything without a single flaw throughout. Of course, we want to find out the truth if we can. But it seems to me, that every one, so far, has formed her idea and then searched for arguments to prove it. Personally, I love to think that everything is a self: that Lake Waban feels us drifting on her top, that the willow over there really knows that the sun is out and shines down on her leaves. That's what I always have liked to think. So when Leibniz entered my life, I grabbed him, and settled back with a satisfied feeling. But what we all ought to do, if we really want to get at the truth, is to come, absolutely unbiased, to the threshold of philosophical arguments and follow out a completely logical line of thought. I do believe now [that] the most adequate interpretation of the universe is as consisting of separate, distinct selves, not as Leibniz holds, simple and "without windows," or relations to others, but interrelated, forming a great community but not all parts of an Absolute Self. God is the ideal self, not the cause of other

selves or of ideas as some Pluralists hold, but the perfect Self toward which we strive. Evil in the world is due, not to God, but to conflicts of finite selves. Each self has freedom of will and choice, and each can do his part in making the community better and approaching the ideal: God. The physical world is either one or numerous selves, it does not vitally matter which. With this theory may be correlated [the] idea of morality as acting and willing to further the "complete desired experience" of the "Universal Community."

ABBIE. Well, Polly, I think your God might have known better than to give men free wills to mess up the world with. And how can [your] selves be both related and distinct? It seems to me that one of these characters must exclude the other. [In fact] all your systems either evade or omit questions which are not easily solved. You, Delia, have failed to explain the relation between the corporeal and the spiritual created "substances." On one occasion you have said that matter and spirit are absolutely unrelated, and on another, that the body and the soul are related through the pineal gland in the brain and that the soul only [affects] the directions of the movements of the body. This is inconsistent [and] it is also, I believe, untrue. For I am conscious of willing movement in varying degrees of amount. For instance, my volition to do a back-jack from the spring-board into the water is quantitatively greater than my volition to pull down the window-shade to keep the sun out of my room.

Mattie's system is evidently very plausible in itself, but it is rendered ridiculous [by] not being able to prove that its fundamental assertion, "matter exists," is true. Bernice [does not] adequately explain the relationship of God and finite selves, how God gives us our ideas; and she argues in circles trying to make the sin and evil of the world compatible with her idea of God. My theory adequately explains the relationship of God and finite selves—how God gives us our ideas [for] all the lesser selves are parts of the Absolute. [And] I have a legitimate argument for the existence of God, whereas [Bernice's] falls flat at once, if the universe can be proved otherwise than good. Then, too, my theory gives a better solution of the problem of evil in the world, for according to it God experiences all that finite selves experience and one can not conceive of his willing for Himself anything that he did not consider good. This makes the Absolute, or God, the author of evil—which may shock some people but a careful consideration shows that this conception of a suffering God is the only alternative to a dualistic theism if one faces the problem of evil squarely and tries to solve it.

EDUCATIONAL EVENTS

PRESIDENT HARDING ON THE TEACHING OF HISTORY

THE teaching of history should be changed to take a broader view that will consider the nations of the western world in their relations to one another instead of considering them separately, President Harding said in a letter to Dr. Kenneth C. M. Sills, president of Bowdoin College, made public on March 9. The president's letter was as follows:

The White House, Washington,
March 1, 1923.

My dear Dr. Sills:

I wish I had the time and opportunity to make something more than a perfunctory acknowledgment of your invitation of February twenty-fourth. I am deeply interested in your plans to hold at Bowdoin an institute of modern history. I think you are inaugurating a fine piece of work and wish I could be among those privileged to participate with you; which I am sorry to say is not possible. There is need for a vast deal of this kind of work on the part of educational institutions and learned societies, not only of this country, but of the world. I remember when I was a very young man hearing a political orator, in a particularly fervid period, announce that "the whole history of the past must be changed." A good deal of fun was poked at this proposal, and I was among those who indulged more or less humor in connection with it. Yet, since the World War, I have sometimes wondered whether the orator was so hopelessly wrong as to justify all the hilarity. Certainly our point of view regarding modern history has been shifted greatly by the events of the last decade. To fit into our histories the story of the years from 1914 down to this time is requiring the most painstaking, thoughtful and analytical consideration of all the course and processes of modern history.

For that thing, it seems very clear to me that henceforward the teaching of history will have to be conducted, if it is conducted wisely, on quite different lines than have marked it in the past. There has been too much disposition among both the writers and students of history to deal with the different nations of the western world, as it were, in separate compartments; to assume that one may study and understand the history of one nation without particularly devoting himself

to the relations of that particular nation to the others. Undoubtedly, we shall from this time forward have a much more adequate conception of the essential unity of the whole story of mankind; and a keener realization of the fact that all its factors must be weighed and appraised if any of them are to be accurately estimated and understood. I feel strongly that such a broader view of history, if it can be planted in the community's mind of the future through the efforts of educators and writers, will contribute greatly to uphold the hands and strengthen the efforts of those who will have to deal with the great problem of human destiny, particularly with that of preserving peace and outlawing war.

It is because I entertain these views that I am so glad to know of what you are undertaking at Bowdoin. I have felt that the work of the institute of politics at Williams College has represented one phase of a very useful service in the direction of illuminating current problems; and I feel that your plan for an institute of modern history at Bowdoin represents another phase, just as useful and desirable, in behalf of a broader conception of the tremendous task that the race confronts. It is everlastingly true that on the whole the best guide to the future is to be found in a proper understanding of the lessons of the past. If some of its lessons have been misunderstood, as I think we all feel now-a-days some of them have been, it is peculiarly necessary in times like these that every effort be made to correct whatever misapprehensions may have arisen. I recall the great interest and even enthusiasm with which I discovered the work of Ferrero on Roman history, because it gave a new means and furnished new applications of so many of the lessons of Old Rome. I venture that in the light of the last decade's tremendous events, there is now the possibility of a reshaping of our attitude toward modern history through such inspirations as you are seeking at Bowdoin, that may ultimately have as great an effect upon our views of modern times as Ferrero's work had upon our attitude toward the story of the Roman Empire.

I do not believe it is a contradiction of what I have already said about the essential unity of all history to add that in our own country it seems to me there is altogether too little knowledge of our national story, too little interest in and serious study of it. One has many times seen the high school student who had completed his studies in an intermediate text-book on American history promptly close the volume with the announcement that "he knew about history." I fear that cheerful attitude is not by any means confined to students of high school age. The business of living and of making a living so largely consumes the energies of most people that they find it all too easy to close the volumes which ought to be kept open to them. I am sure that the work you are undertaking at Bowdoin will be an encouragement to such an attitude toward the study and analysis of history; and so I am sending my congratulations on the programme you have undertaken.

Most sincerely yours,
WARREN G. HARDING.

GROWTH OF ENROLLMENT IN THE BUFFALO HIGH SCHOOLS

ACCORDING to a report prepared by Dr. E. C. Hartwell, superintendent of the Buffalo schools, during the school year ending in June, 1919, the five high schools of the city had enrolled 5,554 students. At the beginning of the next year as many ninth grade pupils as possible were moved from the elementary schools into the high school buildings. This was done because of a report from the State Department of Education that the ninth grade work conducted in the elementary schools was unsatisfactory in character and often wasteful of the pupils' time. It was reported that most of the pupils doing the ninth grade work in the elementary schools found it necessary to spend four additional years in order to graduate from the high schools, whereas it should require but three. Moving the ninth grade pupils into the high school buildings saved pupils this additional year and assisted to relieve the housing conditions for the younger pupils in the elementary schools. The growth in the high school enrollment by years is indicated in the following table:

Years	L. H. S.	T. H. S.	H. C. H. S.	S. P. H. S.	M. P. H. S.	Total
1918-1919	1187	966	1701	804	1257	5915
1919-1920	1671	1599	2531	883	1543	8227
1920-1921	1705	1655	2535	947	1689	8531
1921-1922	2109	1589	2779	1340	1992	9809
1922-1923	2172	1598	2962	1313	2341	10386

It will be seen that the number of pupils cared for by the high schools has almost doubled during the past four years. This tremendous increase is accounted for only partially by the inclusion of some of the ninth grade pupils in the high school enrollment figures. It is more completely and accurately accounted for by the remarkable increase in the number of boys and girls in the city now demanding a high school education.

During the five year period 1917-1918 to 1921-1922, over 29,000 men and women have registered in classes conducted through the evening high schools. These figures do not include over 1,000 aliens actually prepared for citizenship in the evening Hutchinson school of citizenship opened in 1921. Neither does it include the present enrollment in these three schools, which is higher than for the corresponding period of any preceding year. Were these items included, the grand total to date would approximate 37,000 pupils who have come under evening high school influence since September, 1917.

The use of the evening high schools by the board of education for organized adult education is supplemented by organizations having a similar purpose. Every week approximately 2,000 persons attend the society of natural science lectures given at the Hutchinson, Lafayette and Technical high schools. The community chorus of 400 to 500 meets at Hutchinson every Saturday night. All of the high schools are open from one to four nights per week for physical instruction and supervised play. Boy Scouts and other worthy organizations partake of the privileges which are offered. The board of education exercises supervision over all such activities. Approximately 10,000 different people are using the high schools in the evenings for self-improvement every year.

THE ADMISSION OF FOREIGN STUDENTS TO THE UNITED STATES

In the fourth annual report of the Institute of International Education, Stephen P. Duggan, director, announces that an agreement has been reached between the commissioner of immigration at Ellis Island, Mr. Robert E. Tod, and the institute whereby the entrance of *bona fide* students to this country will be allowed even though the quota of the student's country has been exhausted.

Since the present immigration law makes no provision for foreign students coming to this country, a good many deserving applicants were at first refused because the quota of their country has been exhausted. Later these surplus numbers were allowed to enter under bond, but this resulted in some imposters declaring themselves students in order to gain admission to this country. Under the present agreement, the institute and the immigration officials at Ellis Island propose to:

(1) Request all colleges and universities in the United States in which foreign students have matriculated by correspondence before leaving their own countries to send official notice of that fact to the institute before the arrival of such students in this country. The commissioner of immigration will be furnished with a list of these students alphabetically listed so that he can check the arrivals.

(2) The institute will ask its correspondents in foreign countries to keep the educational authorities informed of the necessity of requiring students coming here to bring their official certificates of graduation. If they are not graduates they must bring detailed statements of the subjects studied. It has had printed blanks for the use of these latter students to fill in and have signed by their college authorities.

(3) The institute has suggested that holders of lycée and gymnasium certificates of graduation from European institutions be admitted at once, but that students who bring official evidence of having completed all but the last two years of college work be admitted as having fulfilled the entrance requirements to the standard American college. Until a more definite agreement has been reached between the American institutions of higher education in the evaluation of other foreign degrees, each foreign student's statement will have to stand upon its individual merits.

(4) When the quota of a country has been exhausted, students who arrive in excess of this quota and who are provided with proper evidence that they are *bona fide* students will be paroled in the care of the institute until their cases have been passed upon, instead of being detained at Ellis Island as heretofore. The institute proposes to be responsible for these individuals and to keep track of them, so that the immigration officials may communicate with them at any time.

EXCHANGE OF TUTORS BETWEEN HARVARD AND ENGLISH UNIVERSITIES

ARRANGEMENTS have been made for an exchange of tutors next year between Harvard University and Oxford and Cambridge Universities. President Lowell completed negotiations for the exchange during his recent trip abroad.

Two Harvard tutors will teach in the English universities next year, one in history at Oxford, the other in economics at Cambridge; an Oxford tutor in history and a Cambridge tutor in economics going at the same time to Harvard. The system of college tutors at Harvard has been in operation in these subjects only about ten years, while in the two great English universities it has been maintained in some form for a century, and it is believed at Harvard that the experience acquired during this long period can not fail to be of great value.

The arrangements thus made are said to constitute an important step in the development of the Harvard tutorial system, which is an innovation in American college education. Its most striking characteristic, and that which differentiates it from other systems, is that the work of the tutor is independent of courses, not subordinate to them; for tutorial instruction is quite separate from course instruction. The tutor is a college officer who has a group of undergraduates assigned to him, confers frequently with them, and helps them to correlate what they have learned in their courses and to fill in the gaps between the courses by outside reading, but whose chief aim is to aid them in obtaining a mastery of the subject as a whole, and thus in preparing for the general examination which comes at the end of the senior year.

The tutorial system was inaugurated at Harvard in the year 1912. At that time a general examination for graduation was established experimentally for men "concentrating" in history, government and economics. It was felt that these examinations could be made effective and, at the same time, fair to the student only by the development of a system of individual guidance. So six tutors were appointed. Since then the general examination, with or without tutors, has been put into effect as a requirement for men concentrating in a number of other subjects—in all, in fact, except mathematics and the natural sciences—and the number of tutors has been accordingly increased from six to over thirty.

The tutor usually meets his students individually. In these conferences there is no question of marks or discipline, and yet the attendance in engagements with the tutor is more regular than in courses where absence gives rise to college penalties, a fact that is thought at the university to imply a personal influence of real value or a distinct pleasure in intellectual achievement.

Of this condition Associate Professor H. H. Burbank says in his recent annual report as chairman of the board of tutors in history, government and economics: "Attendance at the conferences is not compulsory. There is no system of monitoring or reports of absences to the college office. The fear of disciplinary action can not serve as a stimulus to meet appointments or to prepare assignments. It is true that the authority to employ disciplinary measures can be invoked if the occasion arises, but in eight years no resort to such measures has been necessary. Yet the cutting of tutorial appointments is comparatively rare, far less than the cutting of courses. The majority of concentrators, well over 90 per cent., seldom fail to meet their engagements. The tradition of tutorial work has become firmly established."

Under the arrangement just made, Dr. Robert P. Blake will go to University College, Oxford, taking the place of either Mr. Leys or Mr. Keir, who will come from that college to Harvard, while Associate Professor H. H. Burbank will go to Kings College, Cambridge, in place of Mr. Shove, who will go to Harvard.

Harvard already maintains an annual exchange professorship with France and also sends annually two exchange professors to a group of western colleges, each for a half year.

THE SUMMER SCHOOL OF BIOLOGY OF CORNELL UNIVERSITY

A SUMMER school of biology will be established at Cornell University this year. It will be conducted under the joint auspices of the university's regular summer session and the New York State College of Agriculture. Intensive courses of study designed particularly

for teachers and graduate students will be given during the six-weeks summer session from July 7 to August 17, and facilities will be provided for research throughout the summer.

This will be a fresh-water school of biology, as distinguished from several coastwise summer schools in which marine forms of plant and animal life are necessarily the principal objects of study and demonstration. Teachers and investigators in the interior states have felt the need of a summer school where the materials for the study of biology are the same as those which they find available for use in their own classrooms and laboratories. The neighborhood of Cornell University is said to have an extraordinary wealth of such materials in both plants and animals. Within easy reach of the laboratories are fresh-water lakes and marshes, salt springs, marl springs, marl bogs, peat bogs, extensive and deep ravines with numerous waterfalls, and upland woods and fields overlying either sandy or heavy soils. Some of these soils are impregnated with lime and some are not. Within a radius of two miles of the Cornell campus there is a variation of more than a thousand feet in altitude, so that the plants and animals in this small area belong to several different life zones.

Biology has been studied intensively at Cornell ever since the time of Louis Agassiz, who was a teacher there fifty-five years ago. One result of this sustained interest has been to assemble there a wealth of laboratory material, including some unique collections of plant and animal specimens, and a complete working laboratory, all of which will be available for those students who are prepared to use them.

As far as possible the staff of the school will be composed of professors who are members of the regular faculty of the university. The teachers will include Professors O. F. Curtis, A. J. Eames, H. M. Fitzpatrick, A. C. Fraser, W. C. Muenscher, H. H. Whetzel and Karl M. Wiegand in botany, plant pathology and plant breeding; Professors J. C. Bradley, O. A. Johannsen and Robert Matheson in entomology, Dr. B. F. Kingsbury in animal histology and embryology, Dr. W. A. Hagan in pathology and bacteriology, and Professors Hugh D. Reed and Albert H. Wright in zoology.

THE NINETIETH BIRTHDAY OF DR. WILLIAM FAIRFIELD WARREN

Boston University faculties, alumni and undergraduates celebrated on March 13 the ninetieth birthday of Dr. William Fairfield Warren, first president of the university. In his home in Brookline Dr. Warren received all day a flood of congratulations, not only from New England, but from various parts of the country.

According to an article in the Boston *Evening Transcript*, Dr. Warren was born in Williamsburg, Massachusetts, March 13, 1833. After his graduation from Wesleyan University in 1853 he established a classical school in Mobile, Alabama; traveled, preached and for nearly two years studied at Andover Theological Seminary. In the years 1858-1860 he was a pastor, first at Wilbraham, Massachusetts, then at Boston. Of the ten years, 1856-1866, more than seven were spent in Europe and the Orient. In 1866 he returned to Boston to organize and preside over the Boston Theological Seminary, which was the nucleus of Boston University, chartered in 1869.

The Boston University Council, composed of the deans of the departments, have drawn up the following resolution:

> The members of the university council of Boston University join with the many thousands who will pay affectionate tribute to President-Emeritus William Fairfield Warren on the ninetieth anniversary of his birth, March 13, 1923.
>
> The services that he has rendered, as an educator abroad, and as an author and publicist whose writings have influenced the wider life of the world, will justify all the praise that can be conferred upon him by his friends and admirers in many lands. Seldom has it been given to any man to touch so ably and so long the great places of inspiration, especially as they have dealt with the formation of the characters of youth.
>
> But we, who have been his partners or his inheritors in the main work of his life and who know with intimacy the university to which he gave not only its first presidency but also its educational ideals as well, have special cause to felicitate him; and to felicitate ourselves, our city, our state and our nation upon the wondrous service rendered by him through his many useful years. We assure him, likewise, that our estimate of that service increases with all added

knowledge of his own work and of the life of the university to which he gave such tireless labor and unfailing love.

Therefore, we send him this brief address as an inadequate expression of our personal regard, and of our estimate of the intellectual and spiritual influence that have gone from his mind and heart into the life of the world.

We wish for him yet many happy and useful days—commending him to that Great God whose servant he has been in all these nine fruitful decades.

THE DEATH OF CHANCELLOR DAY

DR. JAMES ROSCOE DAY, chancellor emeritus of Syracuse University, died at Atlantic City on March 14, following an illness of about ten days.

The late chancellor of Syracuse was born on October 17, 1845, at Whitneyville, Maine, son of Thomas and Mary Plummer Hillman Day, the latter a daughter of Reverend Samuel Hillman. He attended Maine Wesleyan Seminary and then entered Bowdoin College, but quit in his sophomore year because of poor health. For five years he lived in the open in Washington and Oregon.

He was ordained a Methodist minister in 1872, his first two-year pastorate being at Bath, Maine. A year after his ordination he married Anna E. Richards, of Auburn, Maine. He then continued his studies at Bowdoin, receiving his A. B. degree in 1874. He held pastorates in Auburn, Biddeford and Portland, and Nashua, New Hampshire, afterwards going to Boston, Massachusetts. From Boston he was called to New York.

Dr. Day's first pastorate in New York was at St. Paul's, then the leading church of Methodism in that city, and later he served Calvary Church. While at St. Paul's Dr. Day began his long friendship with John D. Archbold, vice-president of the Standard Oil Company.

On November 16, 1893, Dr. Day was elected chancellor of Syracuse University to succeed Dr. Charles N. Sims. He continued as chancellor until last year when he became chancellor emeritus.

From Bowdoin Dr. Day received his degrees of bachelor of arts and doctor of sacred theology, from Wesleyan his master of arts and doctor of divinity, and from Northwestern the degree of LL.D. He was a trustee of Boston University and a member of the general conference of the Methodist Episcopal church for several sessions. In 1904 he refused election as a Methodist bishop.

EDUCATIONAL NOTES AND NEWS

DR. CHARLES W. ELIOT, president emeritus of Harvard University, celebrated his eighty-ninth birthday on March 20.

PRINCETON UNIVERSITY has conferred the degree of doctor of laws on Sir Frederic Kenyon, director and principal librarian of the British Museum since 1909.

PROFESSOR ALBERT EINSTEIN gave the first lecture in the Hebrew University at Jerusalem on February 2 on the theory of relativity. There was a crowded audience, which included Sir Herbert Samuel. The lecture was given in the French language.

DR. DAVID FRIDAY, professor of political economy at the University of Michigan, recently accepted the presidency of the State Agricultural College at East Lansing.

JUDGE HORACE M. TOWNER, of Iowa, sponsor of the Towner-Sterling Education Bill, the Shepherd-Towner Maternity Act, and other important welfare measures passed or considered in the United States Congress in recent years, has been appointed by President Harding as Governor of Porto Rico.

THE week of March 18 has been officially designated by Mayor Moore as Conwell Week in Philadelphia, in honor of Dr. Russell H. Conwell, founder and president of Temple University, who recently celebrated his eightieth birthday anniversary. A committee composed of seventy prominent citizens is collecting funds to erect a building at Temple University to be known as Conwell Hall. The program of the week included sermons in churches last Sunday, daily talks by radio, views of Dr. Conwell in moving picture theaters, and addresses in the public schools of Philadelphia. As has been noted here, Dr. Conwell has been awarded the 1923 prize of $10,000 given annually by Mr. Edward W. Bok to the citizen of Philadelphia judged by

a committee to have done the most useful public service during the year.

DR. WILLIAM FLETCHER RUSSELL, dean of the college of education, State University of Iowa, has accepted the appointment as associate director of the International Institute, Teachers College, New York City. He will assume his duties on May 1. Dr. Russell has had unusual opportunities for studying education in foreign lands. The International Institute, which recently received a gift of $1,000,000 from Mr. John D. Rockefeller, Jr., to be used over a period of ten years, is organized for the purpose of studying educational problems in foreign lands and of training at Teachers College the increasing number of foreign students who come from all parts of the world. Dr. Russell, who received a bachelor's degree from Cornell and the degree of doctor of philosophy from Columbia in 1914, has been connected with the State Teachers College of Colorado, Greeley; George Peabody College for Teachers, Nashville, Tennessee, and the University of Iowa. During the war, 1918 and 1919, Dr. Russell, as a member of the Russian division, committee on public information, was sent on a mission to Siberia, where he made a study of Siberian schools. This study resulted in a book in Russian entitled "Education in a democracy" published in Vladivostok. In 1921, as a member of "The Chinese Educational Commission," representing various American and English missionary boards, Dr. Russell made an extensive trip through China, visiting most of the missionary schools there. The recommendations of this commission are set forth in its report, "Christian education in China." The International Institute, Teachers College, has as its director Dr. Paul Monroe, who has for years been concerned with the training of foreign teachers and who has recently returned from an extended visit to China where, at the invitation of the Chinese government, he has been advising with Chinese educational leaders with reference to the betterment of the national system of schools. Dr. I. L. Kandel, formerly of the Carnegie Foundation for the Advancement of Teaching, will be in charge of the research work of the institute.

PROFESSOR PAUL PACKER, an alumnus of the university, has been named dean of the college of education at the University of Iowa to succeed Professor William F. Russell. Professor Packer's most important contributions to education have been in the field of school administration. For several years he has been a close student of the problem of school tests. More recently he has devoted most of his time to the study of school finance, building surveys and the planning of adequate supervisory staffs in large cities. He has been called in consultation on these problems in various important cities in the United States, including Cleveland, Ohio; Detroit, Michigan; Flint, Michigan, and Gary, Indiana. His reports upon his studies of school problems in these cities constitute a substantial contribution to the literature of school administration. He has also been a contributor to leading magazines in school administration.

MISS ADA LOUISE COMSTOCK, dean of Smith College, has been elected president of Radcliffe College and will assume office in June. Miss Comstock will succeed Dr. L. B. R. Briggs, who last fall resigned after twenty years of service as both head of Radcliffe and dean of the Harvard faculty of arts and sciences. The committee on choice then appointed reported in favor of a full-time president of Radcliffe, as the college had so grown as to require the entire time of both a dean and a president. Miss Comstock, since 1921, has been president of the American Association of University Women. She was born in Moorhead, Minnesota, and after studying for two years at the State University transferred to Smith College, where she was graduated with the class of 1897. In 1899 she received a master's degree from Columbia University. She then returned to the University of Minnesota to teach and became professor of English and dean of women.

PROFESSOR RALPH V. D. MAGOFFIN, of the Johns Hopkins University, has been appointed head of the department of classics at New York University. This is a new department which will include the Latin department, of which Professor E. G. Sihler is now head, and the Greek department, headed by Professor W. E. Waters. Professor Sihler and Professor Waters will retire in June.

DR. THEODORE H. JACK has resigned the deanship of the school of liberal arts at Emory University, Georgia, to devote himself to his work as dean of the graduate school.

PROFESSOR L. P. BRECKENRIDGE, chairman of the department of mechanical engineering at Yale University, will retire from active teaching in June. A graduate of the Sheffield Scientific School of the class of 1881, Professor Breckenridge has taught at Lehigh University, the University of Illinois and, since 1909, at Yale.

DR. GEORGE GRANT MACCURDY, assistant professor of prehistoric archeology at Yale University, has been promoted to professorial rank, with the title of research associate.

DR. LEO WOLMAN, lecturer at the New School for Social Research, and Mr. Willard Thorpe, recently instructor in Amherst College, have joined the research staff of the National Bureau of Economic Research. Mr. Thorpe will have charge of the compilation of economic statistics for a treatise which Dr. Wesley C. Mitchel, director of research, is planning.

ARCHER O'REILLY has been elected president of the Federated Alumni Association of St. Louis, an organization of college clubs of St. Louis formed to disseminate information about the various colleges in the association and to promote a general interest in college education.

DR. W. C. WICKER, head of the department of education in Elon College, North Carolina, has been elected to the new position of educational field secretary created at the recent session of the North Carolina Grand Lodge of Masons.

THE executive board of the American Library Association has appointed Milton J. Ferguson, state librarian, Sacramento, California, as official representative of the association at the world conference on Education which is to be held in Oakland-San Francisco, from June 28 to July 6, in connection with the annual conference of the N. E. A.

DR. HARLAN UPDEGRAFF, professor of educational administration, and Dr. Leroy A. King, assistant professor of the same subject, were the subject of a letter of appreciation from the advisory committee on the State Education Expenditures of Pennsylvania because of the contents of their educational report recently made public.

JOSEPH M. SHEEHAN, chairman of the New York City board of examiners, has been deposed from his chairmanship by his colleagues on the charge that he refused to explain certain alleged irregularities in the placement of teachers' names on the eligible list.

FRANCIS M. HUGO, New York secretary of state, with an advisory committee of clergymen, will supervise all films to be shown in the churches and schools of New York.

MR. ALBERT HAWLEY LUCAS has been appointed assistant head master of Episcopal Academy, at Overbrook, Philadelphia. He will have charge of the lower school.

Two hundred and sixty alumni and former students of the University of Chicago attended the recent annual dinner held during the meeting of the Department of Superintendence of the National Education Association. Among the speakers were Colonel Leonard P. Ayres, of the Cleveland Trust Company, and Director Charles H. Judd, of the School of Education, the latter paying a high tribute to the retiring president of the university, Harry Pratt Judson, and bespeaking approval of the policies of the new administration under Acting President Ernest DeWitt Burton.

AT the call of Professors Snedden, Smith, Clow, Finney and Peters, some thirty persons interested in educational sociology met at Cleveland February 27 and organized a national society. Professor W. R. Smith, of the University of Kansas, was elected president and Professor C. C. Peters, of Ohio Wesleyan University, secretary-treasurer. Professor David Snedden, Ross Finney and E. George Payne were appointed as the executive committee. It is the intention to hold a session each year in connection with the meeting of the department of superintendence and a second session in connection with the American Sociological Society. The primary purpose of the association is to assist in the standardization of educational sociology as a teaching subject and to develop, by interchange of

experiences and studies, a technique for scientific research in this field. Its secondary purpose is to foster solidarity and friendships among the people teaching, or otherwise interested in, this subject.

The third annual meeting of the Supervisors of Student Teaching, a national organization of those engaged in supervising and directing student teaching, was held at the Cleveland School of Education, February 26 and 27, in connection with the department of superintendence of the National Education Association. The program consisted of a series of papers on various phases of practice teaching and inspection of the work of the Cleveland School of Education. Officers elected were: *President*, Professor W. F. Tidyman, State Normal School, Farmville, Va.; *secretary-treasurer*, S. I. F. Williams, Heidelberg University, Tiffin, Ohio; *members of executive committee*, Professor Fiske Allen, State Normal College, Charleston, Ill., Professor H. C. Pryor, State Normal School, Aberdeen, South Dakota. Miss Frances King, Philadelphia Training School for Teachers, is also a member of the executive committee.

The lecturers at the Institute of Modern History to be held at Bowdoin College from April 16 until April 28, inclusive, are as follows. Raymond B. Fosdick, formerly undersecretary general of the League of Nations. He was civilian aide to General Pershing in 1919 in France; Henry Morgenthau, former ambassador to Turkey; Professor Alfred F. Pribram, of the University of Vienna; Professor William L. Westermann, of Cornell University; Professor Robert H. Lord, of Harvard University; Dr. Isaiah Bowman and Professor Charles Seymour, both of Yale University. A series of six public lectures and six lectures for the student body will be delivered. In addition each speaker will conduct round-table discussions.

President A. Lawrence Lowell, of Harvard University, and Mrs. Lowell, after absence of a month spent in England, have returned.

President Lemuel H. Murlin, of Boston University, has been voted a vacation by the trustees, after twelve years of almost continuous labors. He and Mrs. Murlin, who sailed from Boston on March 17, expect to be gone for about six months. They will visit the principal capitals of Europe, including Russia, studying the educational systems with reference to the life of their cities. Bishop Edwin Holt Hughes, of the Boston area of the Methodist Episcopal Church, will be acting president during Dr. Murlin's absence.

Professor Reid Hunt, of the Harvard Medical School, has been appointed visiting professor at the Peking-Union Medical College.

Dr. Hanau W. Loeb, dean of the St. Louis University of Medicine, sailed from San Francisco on February 22 for a tour of the Orient. During his trip Dr. Loeb will visit the medical schools of Japan, China and the Philippines.

Dr. Roy C. Flickinger, dean of the College of Liberal Arts, Northwestern University, has presented his resignation from his administrative duties to be effective on July 1, 1923, when he will have completed four years in this position. He has been granted a leave of absence for one year which he will spend in study and travel abroad, mainly in Italy and Greece, preparatory to resuming his position as professor of Greek and Latin at the beginning of the academic year in 1924.

Professor Mark A. Dawber, of Boston University School of Theology, head of the department of rural church methods, will work in Denmark during this spring and summer on the folk schools of that country, which have highly developed the idea of vocational schools and cooperative agriculture. Professor Dawber will also study at Oxford and Manchester Universities in England.

Professor Franklin Madsen, of the music department of the Brigham Young University, Provo, Utah, left this month for Europe, where he expects to spend the spring and summer in the music centers of the continent. Professor Madsen is especially interested in orchestral and vocal music. Professor Elbert H. Eastmond, head of the art department and an authority on pageantry, expects to spend the spring and summer at the University of Washington, Seattle, where he will devote much of his time to oil painting and other branches of fine art. Professor B. F. Cummings, head

of the modern language department, will spend eighteen months at Stanford University, where the study of Spanish will occupy a large portion of his time.

A. T. ALLEN has returned to his post as supervisor of teacher training with the North Carolina State Department of Education, Raleigh, after having spent the past few months in study at Columbia University, New York.

PROFESSOR MAURICE PARMELEE, who has been making economic investigations in Europe for the department of state since 1920, having resigned his position as United States economist consul at Berlin, is returning to America in April, 1923. He has completed a book entitled "Blockade and sea power," which will be published in the near future.

FRANZ BOAS, professor of anthropology at Columbia University, has accepted an invitation to deliver a series of six lectures at Bryn Mawr College during the month of April.

DR. PAUL ELMER MORE, of Princeton, New Jersey, editor of the *Nation* from 1909 to 1914, will deliver the commencement address at Oberlin College in June.

DR. W. W. CHARTERS, director of research at the Carnegie Institute of Technology, spoke on February 8 to the Missouri University Teachers' Association on "Problems in the course of study."

DR. PETER H. GOLDSMITH, of the Institute of International Education, delivered recently a lecture on "Brazil in the hour of her majority" at the University of Michigan. Dr. Goldsmith is head of the Pan-American section of the Society for International Conciliation. He is engaged in establishing relations between universities of the United States and those of Pan-American countries.

DISCUSSION

INTELLIGENCE TESTS[1]

1. The value of mental tests as aids in grading school pupils, diagnosing individual disabilities and selecting individuals for temporary employments requiring ability to learn new duties quickly (as in the Army tests) is unquestioned.

2. The use of mental tests on a wide scale to group individuals during childhood and youth in a way that will "load the dice" as to future occupation, opportunity, mode of life or social status is to be condemned:

(*a*) Because of the present uncertainty regarding the accuracy of the tests as measures of *innate* mentality.

(*b*) Because of the prevailing uncertainty (not to say profound ignorance) concerning the part played by innate *mentality* as compared with other presumably innate factors in determining achievement.

(*c*) Because of the clear dependence of democratic institutions upon a widespread community of ideas, ideals, standards, aspirations and sympathies, which can conceivably be provided, if at all, only by a *common* culture, which, in turn, would be prevented by any considerable amount of differentiation or segregation in elementary education.

3. The application of the mental-test theory to education is fraught with especial peril because the results of the tests are expressed in relative terms (whether of "mental age" or of "intelligence quotients"). Democratic education is fundamentally interested not in the possibility that this individual may surpass that individual, but rather in the absolute advancement of both and of all. The whole tendency of the theory of testing, of its technique and of its formulation of results, has been to obscure absolute gains.

4. Assuming that intelligence means (among other things) ability to grasp abstract conceptions, education is interested both in the *growth* of that ability and *in the number and quality of the abstract conceptions that are grasped.*

In comprehending an abstract conception (for example, the notion of "ratio," the idea of "gravity," the conception of "representative government") different minds work with varying degrees of rapidity, due to the readiness or the slowness with which they pass from the particular to the general. Let A represent the starting-point in such a process and Z the terminus. Different individuals may require steps or gradations pictured as follows:

[1] Some remarks addressed to the Psychology Club of Teachers College, Columbia University, November 22, 1922.

Genius:	A	.....																								Z
High IQ:	A	.....											M	.....												Z
Medium IQ:	A	.....	D	.....			H	.....					M	.....			Q	.....		T	.....			X	.....	Z
Dull:	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Stupid:	A	B	C	.....	(further progress impossible)																					

Democratic education is interested in the rapidity of the process; it is far more fundamentally interested in getting as many persons as possible to as many common Z's as possible.

5. It is fairly clear that the ability just referred to grows from infancy to (physiological) maturity. Some of this growth is unquestionably due to the gradual maturation of the anatomical structures and physiological functions underlying mentality. It is also presumable from the evidence already on record that some of the growth is due to systematic education. Current discussions in the field of mental testing, both "popular" and "professional," have over-emphasized the former type of growth and have almost entirely neglected the latter. It is a fair "guess" (not entirely unsupported by evidence) that somewhat more than one half of the "intelligence" of the average sixteen-year-old school child has been contributed by his schooling.

6. How far "intelligence" may grow *after* the growth due to natural forces has ceased—whether, indeed, it grows at all after maturity—are questions for which there is not as yet even the semblance of an answer. It can hardly be denied, however, that *something* grows with the continued stimulus of systematic education (or of experience in fields that constantly exercise the abilities in question). If it be objected that this something is not "intelligence," the answer is that it then represents something rather more important than intelligence.

7. The tendency of the mental-testing movement has been to ascribe to *native* intelligence an importance that is beyond its just deserts.

(*a*) Individual differences in native intelligence are far less significant socially than are the resemblances in ideas, ideals, standards and attitudes that education may bring about.

(*b*) While the native intelligence of men of great achievement has undoubtedly been well above the average in the great majority of cases, there is much evidence that other presumably native qualities as well as favorable environmental (including educational) influences have played a most important part in insuring social gains.

(*c*) If native intelligence were so all-important as present-day psychology apparently teaches, we should expect a discontinuity of culture in place of the clear continuity of culture that is revealed, not only by history, but also by what has been learned of prehistoric man. It has clearly been the consolidation of environmental gains that has lifted mankind from the paleolithic levels.

(*d*) If native intelligence were so all-important, we should expect to find the great turning-points of human progress correlated with positive variations or increases in native intelligence extended generally through large social groups. This is biologically improbable, and as a matter of fact the turning points in social evolution have actually been correlated with improved methods of communication—*improved means of letting more light into common minds!*

8. Whatever the attitude of the individual psychologist may be toward the significance of native intelligence, the psychologists as a group owe it to the public (in view of the wide interest that has been aroused in the tests and the peril that lies in current misinterpretations):

(*a*) To set forth clearly the fundamental assumption that underlies any effort to infer differences in native mentality from the results of any mental test—the assumption, namely, that, in respect of the individuals compared, educational and other environmental stimuli have had a chance to operate equally.

(*b*) To deny publicly and as a group the assumption that the results of the Army tests constitute a just appraisal of the *native* intelligence of the American people.

(*c*) To make clear to the public the purely relative significance in which the terms "mental age" and "intelligence quotient" are used.

(*d*) To discourage the use of phraseology of the following type: "So-and-so (an adult) has the *mind* of a ten-year-old child."

W. C. Bagley

BAITING TEACHERS

A new plan for occupying the spare time of summer vacations of teachers has been approved by the school board of Hammond,

Indiana, according to an announcement published in the *School Board Journal* for February, 1923, page 83. The announcement reads in part as follows:

> To promote professional improvement of all teachers, principals and supervisors elected to positions in the city schools, a bonus of $50 is provided in the annual salary of each teacher, principal or supervisor, provided the summer has been spent according to the following plan:
>
> First summer: Normal school, college, university or approved special school attendance, receiving a minimum of five semester hours' credit. If fewer than five semester hours are credited, only $10 will be granted. In counting summer attendance, credits for correspondence or extension work done during the school year are included.
>
> Second summer: Same as first summer, or travel of educational value, covering at least six weeks. Statement of travel, places visited, time included must be submitted to the board for approval before the bonus is granted.
>
> Third summer: Rest, or travel of educational value.
>
> Fourth, fifth and sixth summers: Repeat the foregoing plan of summer attendance, travel and rest.
>
> Under the plan, the bonus is included in the last pay check of each school year. . . . Travel or rest following extension or correspondence courses may not be credited to the teacher.

This must be a great relief to the teachers of Hammond, for they are now freed from all thought concerning their periods of rest, study and travel, but enterprising superintendents need not despair. The fund of schemes for baiting teachers is not exhausted. There is still room to decree what teachers shall eat, what they shall drink and wherewithal they shall be clothed. This might be contrary to Scripture, but it would be in full harmony with the present tendency in the treatment of school teachers. We are rapidly developing in our schools the paradoxical situation of an autocratic machine whose function it is to turn out democratic citizens.

This sorry state of the school teacher is the result of several causes. One of these is the failure to distinguish between the teacher who has been trained and the teacher who has not been trained. It is to be expected that the inadequately trained teacher should be required to meet a certain standard of education and efficiency before being admitted to full professional status, but it is humiliating to subject all teachers to compulsory education for the full period of their professional careers. They ought to be able to look forward to graduation and independent professional status some time. No one asks, not even the teachers themselves, that they be relieved of professional growth through reading, study and professional association, but this should be motivated from within, by the demands of their professional life, not from without by compulsion or enticement.

Another cause for the paternalistic treatment of teachers is found in the fact that autocratic control is easier than democratic control. A decree for compulsory study can be formulated by a nimble-witted superintendent during the lunch hour. He can then write it out during the afternoon and have it approved by the board in the evening. The next morning he can have it mimeographed and sent to the teachers and the thing is done. But not so with democratic control. This requires leadership of a high order. It requires intelligence, tact, personality and a fine and fair evaluation of the viewpoints of others. Yet democratic control is what we must come to in American education if our education is to remain American in spirit. The tide with which we are now drifting must be turned. A superintendent must appear who, unconscious of his own glory, will elicit the wholehearted cooperation (not support) of his assistants, who will in turn elicit the thought and initiative of the principals and supervisors, who, in fine, will elicit and leave room for the best constructive efforts of the classroom teachers. All will be conscious of the same goal but there will be no arbitrary conformity in achieving this goal. Due recognition will be given to all who excel, no matter in what, but bonuses or special salary increases will be absent.

A corps of teachers so led will soon develop a wholesome, cooperative professional spirit. Professional growth will be assured, for the very needs of the teacher will compel this, just as it does now with superintendents, college teachers and professional people generally. Professional spirit and professional growth of

the right sort can not be gained through compulsion or enticement; they can be gained only through professional participation, professional responsibility and personal recognition.

W. C. Ruediger
George Washington University

SPECIAL CORRESPONDENCE

SUPERVISED PRACTICAL WORK FOR BOARDING STUDENTS IN AGRICULTURE

I think that we have all reached the conclusion of Dr. Stimson, father of the project method, that an agricultural project away from home is possible from the pedagogical point of view. One type of supervised practical work is that of the individual's action, while the other is that of the group's activity. Professor Steward, of Cornell, defines a project as any enterprise in which no elements essential to its completeness as it does or would exist in real life are omitted. The practice of the project method is now wide-spread. We find many schools from the Bristol County Agricultural School in Massachusetts to the John Tarleton Agricultural College of Texas making use of this modern method in education.

The Bristol County School has both tractor and horse equipment, and here we find one boy doing the managing and cost accounting on a project involving five acres of potatoes. The director in one of the Texas colleges says: "We require our college students to carry out projects just as high school students would. For example, some of our students have a farm and all the live stock connected with it, and take the entire farm business for the year for their project. Another example is where a college boy looks after the dairy work, keeping all the records of production and making reports. We have several such boys now working their way through college with such projects."

In some other cases the college or high school boys who are attending boarding schools grow their crops during the summer vacation, keeping their records and making reports in the autumn when they return to their classrooms.

At the West Texas State Normal College, the boys bring their animals to the school farm and rent space and carry out feeding projects with beef cattle, milking enterprises with dairy cattle, and swine management work with brood sows and litters. Some of the students have carried out very successful poultry projects at this boarding school by using the college equipment.

One phase of the work that has proved satisfactory under Texas conditions is the boarding-house project. In this plan the boy makes arrangements with his landlord to keep his chickens, milk cows or fattening hogs at the boarding-house. The feed is either brought from home or secured in the local markets. These boys are often designated as the "boys who bring their cows to school." Other requirements are that of the farm surveys, renting land and the work on the school farm under the direction of the teacher of vocational agriculture. I regret that some state supervisors have withdrawn funds from schools where the students were forced to be away from home; the thing the supervisor should have done would have been to have offered the officers of such schools sympathetic cooperation toward solving this great agricultural problem.

Frank R. Philips
Department of Agriculture,
West Texas State Normal School,
Canyon, Texas

QUOTATIONS

CHILDREN IN MUSEUMS

During the last few weeks letters have appeared in our columns on the subject of children in museums. The opinions expressed have covered a wide range, from the extreme exclusiveness of those who would apparently treat museums as equivalent to the silence room of a club, to the genial kindliness of the authority whose reply to a timid request for permission to enter was: "Certainly, my boy, it is yours." To any one who has surmounted the first doubt whether the subject of discussion is the possibility of immuring children in glass cases as freaks or nuisances, a fate which many would deem highly proper for other people's children, it becomes clear that there is here no technical or abstruse question, but merely a very general problem of human conduct. Children in years, like children of a larger growth, are likely, when they are bad, to be very, very bad, and when they are good to be neither very nor

always good. The real question appears to be, not whether children should be excluded from or admitted to museums, but whether they can be educated to a moderate degree of forgetfulness of self and of thoughtfulness for others. That is a question which obviously travels far beyond museums, and has no exclusive or even special connection with them. People are to be found so hypersensitive to the words and deeds of others that, even in walking about the streets, they read disparagement or affront into the words and laughter of others who are blissfully unconscious of their very existence. Those so unfortunately natured are likely to resent the intrusion of children wherever they are, and particularly to regard their presence in the semi-ecclesiastical atmosphere of a museum of antiquities as a nuisance devised for their especial annoyance.

It is, however, not necessary to belong to this thin-skinned fraternity to find the presence of children a hindrance to quiet thought or serious study, and the tired man or the earnest investigator may well conceive that he has reasonable ground for desiring their exclusion. Others, and the majority, will think it a tremendous responsibility, not merely by reason of social obligation, but on even higher ground, to shut out children from national and municipal collections. To exclude them would be to run the risk of repressing the small beginnings of that intellectual curiosity which leads eventually to knowledge, and to the far greater wisdom. It is idle to pretend that children will haunt museums solely because of the promptings of that curiosity. But it is never certain that, though the motive of the visit may be quite other, the thirst for knowledge will not be stimulated into active being. Balaam, called to curse, remained to bless. Children drawn by the prospect of sliding a little brother or sister up and down a polished floor may, for all one can tell, be the destined field of an intellectual miracle. At least one voracious, though quite indiscriminate, appetite for natural history sprang from a small boy's casual glimpse, in a provincial museum, of two forlorn-looking tigers fighting a duel to the death over the body of a very immature elephant, recently deceased in a traveling menagerie. The Cities of the Plain might have been spared for the sake of ten righteous men. Any inconvenience caused by hundreds of children in museums may well be justified if here and there the sight of a portentous beast, of a curious relic, or of a lovely work of art brings to birth, however dimly, a longing to know more or to live more beautifully. To shut out all children on the ground that some of them have not been adequately trained elsewhere might easily prove to be the unforgivable offence against one of these little ones.—*The London Times.*

EDUCATIONAL RESEARCH AND STATISTICS

EXAMINATION AND TERM GRADES IN ELEMENTARY ZOOLOGY

THE problem was originally conceived to determine (as far as would be shown by the examination marks) the coincidence of the nine sections of elementary zoology in the University of Pennsylvania taught by six instructors. As the work in this department is handled, each instructor is practically a free lance in control of his classes, coordination being accomplished through general conferences and an outline or program of suggested topics to be covered. Such a system might, if each man stressed his chief interests, conceivably result in considerable diversified information in the various fields taken up and the analysis of the examination marks was made to determine just what was the subject-section relation. Other noteworthy points have come out during the study.

Material was available from three terms or from nineteen sections totaling 442 students. Compilation of the grades has brought out the relation of:

1. Sections to each other in respect to subject.
2. Examination grades to term or final grades.
3. Questions involving memory to those requiring thought or reason.
4. Various types or fields of biological subject matter.

The method consisted in computing:

1. The average grade per section per question.
2. The total average examination grade per section.
3. The average term grade per section.
4. Recording the number of answers and zeros per question per section.

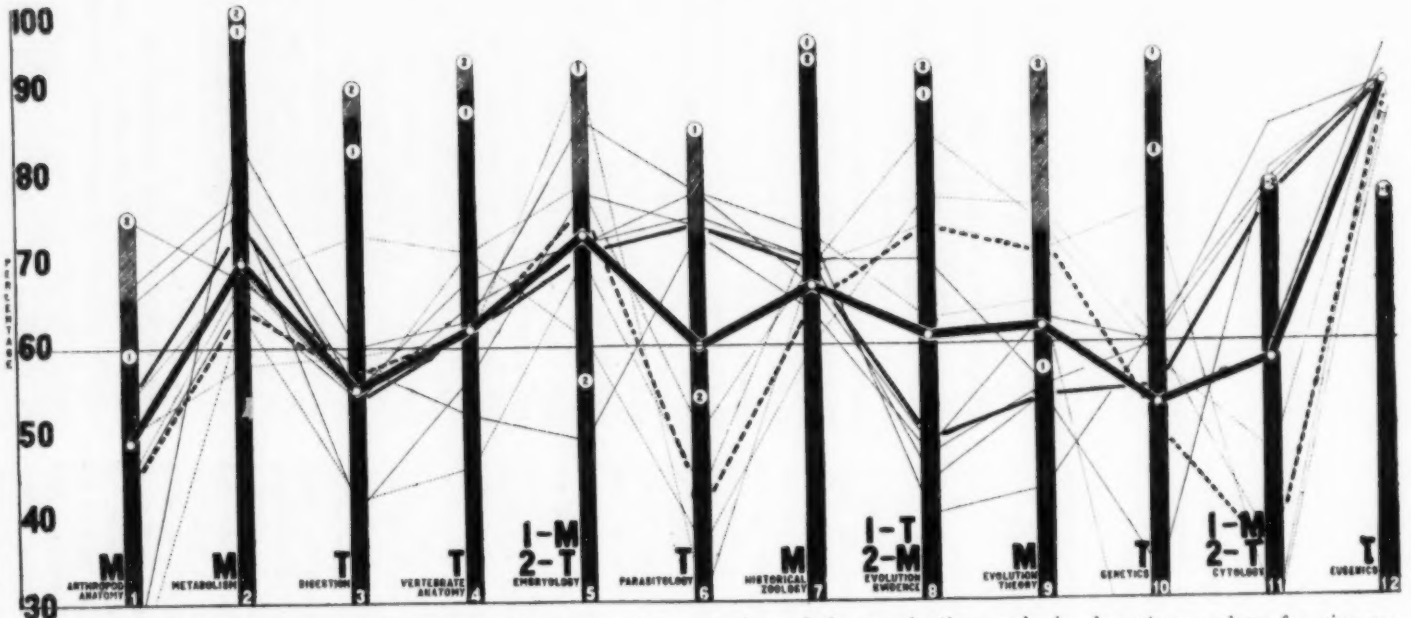

Figure 1. In the above graph are represented the results of a comparison of the examination marks in elementary zoology for nine sections and these grades are plotted for each section and also for the average in the various fields of work touched on.

Two examinations were given: one to a group of five sections and the other to four sections.

The light solid lines indicate the various grades received by each section of group 1, while the heavy solid line follows the average for this group.

The light broken lines do the same thing for group 2 and the heavy broken line traces the corresponding average.

The heavy band running across the chart graphically represents the general average.

The solid black pillars indicate in per cent. the average number of answers attempted for a given question by all students, while the small numerals in circles on the pillars show the number of answers given by group 1 or 2.

The letters T and M show whether the question required thought or memory while the associated numerals indicate the examination given group 1 or group 2.

Comparison of the grades shown for any subject with the nature of the mentality required and also with the percentage of answers will give the reader a fairly accurate idea of the reaction of the students to the matter involved.

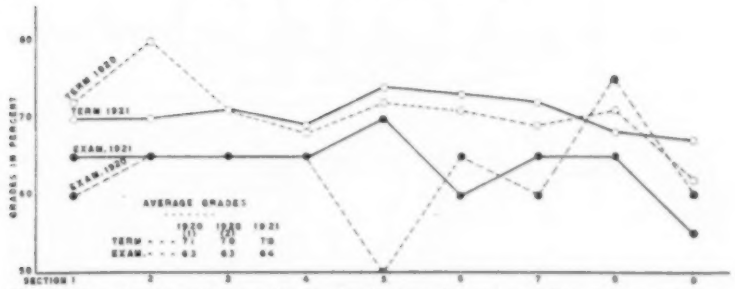

Figure 2. A comparison of examination and term grades for two years.

5. Comparing:
   - *a.* The average grade per question per section to the same results from other sections.
   - *b.* The thought and memory questions in regard to their relative grades and number of complete failures to answer.

Since few people have the ability of reading numbers as most of us can read words it is worth while to graphically represent the results derived above. Reference to the two charts will eliminate the necessity of further describing the possibilities of the method. Needless to say the enthusiasm of the compiler of such statistics would soon diminish if it would not die completely without the aid of an adding machine and slide rule as some thirty thousand figures come under consideration. With these instruments, however, the work is neither tedious nor slow and of the usefulness of the results the reader can judge for himself.

Referring to the first of the four relations mentioned above, Figure 1 graphically tells the story and need be but little discussed. There can be seen to be remarkable graphical proximity of the various sections in one or the other of the two groups for the different questions. As the individual instructor is interested not so much in the average of all the sections as in discovering what his own efforts produced, the lines that diverge widely from the mean must be considered. In practically all cases in which this occurs it was found that the instructor had given the field of work covered in the question either more or less attention than had the other teachers. Such cases are exceedingly few and it is fair to say that the sections under their various mentors show a very satisfactory uniformity in knowledge of the various biological fields.

Most teachers, I think, have felt that the examination seldom gave a true valuation of a student's ability and I was considerably surprised to find the close parallelism between term and examination grades. The latter are lower, to be sure, but they nevertheless run along so evenly with the term marks as to justify their acceptance *(at least for the average)* as an index of knowledge acquired. Figure 2 charts these relations between term and examination marks for the various sections and again brings out a gratifying conformity to type. It may be pointed out that the various examination grades form a valuable check on the term marks since in this department each examination is reviewed in part by the entire staff while the term grade is largely an expression of the instructor's opinion of the caliber of his students. In this instance it is clear, as illustrated in Figure 2, that there is excellent agreement between the opinion of the entire staff expressed in examination marks and that of each instructor shown in final grades. The marked discrepancy between these two points at five may very possibly be accounted for on the assumption that the teacher who was new in the work and somewhat inexperienced failed to impart or to fix the same information as the others. This inexperience would be expected to show in the examination results rather than in the grades that indicate his personal judgment of the mental ability of his students.

I was disappointed at first at being unable to find any very marked difference, which I felt sure existed, between questions involving thought and those requiring only memory for their answer. This, however, became immediately apparent on comparing the zeros awarded each group. The students have a choice of ten out of twelve questions and the zero percentage was obtained by comparing, for a given question, the number of faulty statements with the total number of answers. The table given

TABLE SHOWING GRADES GIVEN IN THE DIFFERENT FIELDS OF WORK IN ELEMENTARY ZOOLOGY

(Summary of three terms)

	Memory Grade	Number of Answers	Number of Zeros	Thought Grade	Number of Answers	Number of Zeros	Average for both Questions
Arthropod Anatomy	50	335	41	62	44	1	56
Vertebrate Anatomy	....	....	....	60	379	19	60
Metabolism	63	214	2	64	190	10	64
Parasitology	75	187	5	78	167	4	77
Embryology	72	178	7	70	178	20	71
Histology	69	124	11	....	....	....	69
Cytology	77	89	6	67	301	65	72
Genetics	82	131	....	50	304	73	66
Eugenics	....	....	....	90	152	2	90
Evolution Evidence	74	152	12	59	318	48	66
Evolution Theory	56	160	12	40	179	60	48
Historical Zoology	67	187	2	....	....	....	67
Total	69	1757	98	64	2212	302	....

above shows the relation of total numbers of answers to the number of failures to answer correctly. Fifty-five per cent. more zeros fell to the lot of the thought questions than to the other group and this relation has been very constant for three terms.

It might be said the memory questions (in this department) take a slight precedence over thought questions in respect to grade, but are 50 per cent. superior in the matter of completely incorrect answers. If memory is stretched over too great a length of time (as in the case of Arthropod Anatomy, which was never reviewed from the beginning of the year) then it falls below the efficiency shown in the thought questions and not quite so low in the number of zeros obtained.

The table below summarizes the reactions of the students to the various subjects considered. Grade is not always an indicator of their appreciation or dislike, for Genetics, which they voted as preferring, is by no means represented by the highest grade, while Evolution, a third favorite, classes with Arthropod (Insect) Anatomy which they liked not at all.

The method just recorded for comparing the work of a number of sections in the same subject under different instructors should prove useful and valuable when applied to similar conditions in any department. It should appeal to the teacher as affording a check on his efforts, enabling him to learn where greater or lesser emphasis should be placed in the future. To the director of multiple-section courses the results of such study will reduce the work of his department to a few readily interpretable figures permitting an understanding of the values and difficulties of the subject matter and suggesting the advisability of new plans of attack. To the psychologist the reaction of thought to memory questions as here brought out should prove of interest.

The above figures may also serve as an answer to those who believe that unity and coordination in teaching multiple-section courses necessitates a strong centralization of power, with one individual doing all the lecturing and directing the laboratory work through aides. The latter plan, it seems to me, can scarcely be fully efficient due to the loss of incentive to initiative on the part of the assisting instructors. That it is possible for an average group of college teachers to impart a uniform mass of information when handling sections largely on their own responsibility is evidenced by the results here presented.

The averages for examination and term grades given in Figure 2 agree so closely for the several groups as to suggest that these marks may indicate the average intelligence or reaction to zoology of the students at the University of Pennsylvania. The differences in systems of grading vary so as to make it difficult to directly compare the grades of various institutions, but it seems probable that the examination-term relation would be comparable in many instances and suggests the desirability of analyzing similar statistics gathered in different parts of the country.

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